

DEER ISLAND: SHORELINE EVOLUTION AND MORPHOLOGY

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Deer Island was acquired in May 2002 by the State of Mississippi and incorporated into the Mississippi Coastal Preserves Program. The 5.7 km long island is located just offshore of the entrance to Biloxi Bay in Harrison County, Mississippi. Since the 1850's the island has lost nearly one third of its area to erosion and is now being considered for beach renourishment and marsh restoration projects. Deer Island consists of Holocene sediments overlying a core of the Pleistocene Gulfport formation. In general, the Pleistocene outcrops in the west and Holocene surficial sediments are dominant to the east, which is the most severely eroded portion of the island. In an effort to determine the island's future retreat patterns the present beach morphology and historical shoreline change rates were used to model the island's evolution. The island's morphology was mapped in the field using eight different morphology components and then grouped into six different shoreline classifications. The highest change rates occurred along shorelines with relict beach morphology classification; the lowest change rates occurred along shorelines with wooded beach morphology classification. An extrapolated shoreline has been created for the year 2050 by measuring and averaging the rates of change for both long (decades) and short-term (years) periods along the shoreline at the different morphology types and projecting that into the future. Based on this analysis, another 20-25% of the island may be lost in the next 50 years.